

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
28 July 2005 (28.07.2005)

PCT

(10) International Publication Number
WO 2005/067836 A1

(51) International Patent Classification⁷: **A61F 13/00**,
13/42, A63H 33/36, G06K 7/10

(21) International Application Number:
PCT/US2004/025863

(22) International Filing Date: 9 August 2004 (09.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/749,790 29 December 2003 (29.12.2003) US

(71) Applicant (for all designated States except US): **KIMBERLY-CLARK WORLDWIDE, INC.** [US/US]; 401 N. Lake Street, Neenah, Wisconsin 54956 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BRUMM, Russell, J.** [US/US]; 1087 Bonnie Drive, Menasha, Wisconsin 54952 (US). **COHEN, Jason** [US/US]; W2801 Oakridge Drive, Appleton, Wisconsin 54915 (US). **ELLINGSON, Daniel, L.** [US/US]; W5903 Sweet Clover Drive, Appleton, Wisconsin 54915 (US). **ELLINGSON, Alissa**

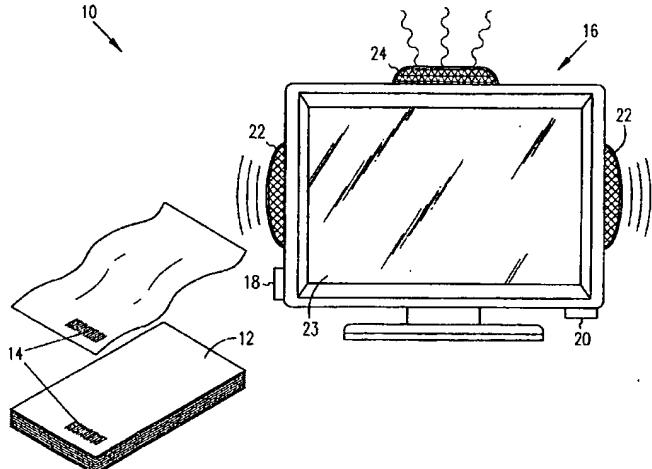
[US/US]; W5903 Sweet Clover Drive, Appleton, Wisconsin 54915 (US). **EPPSTEIN, Brian, C.** [US/US]; 1603 S. Nicolet Road, Apt. 5, Appleton, Wisconsin 54914 (US). **HU, Sheng-Hsin** [US/US]; 800 E. Woodcrest Drive, Appleton, Wisconsin 54915 (US). **MARVIN, Jennifer** [US/US]; W6750 Sunnyvale Lane, Greenville, Wisconsin 54942 (US). **READE, Walter** [US/US]; W6818 Hazelnut Lane, Appleton, Wisconsin 54915 (US). **RIBBLE, Brendon, F.** [US/US]; 1308 Oneida Road, Menasha, Wisconsin 54952 (US). **WAGNER, Eric, F.** [US/US]; W4794 Questa Court, Sherwood, Wisconsin 54169 (US). **WESTBROOK, Dan** [US/US]; N7697 Palisades Trail, Sherwood, Wisconsin 54169 (US).

(74) Agents: **PERET, Andrew, R. et al.**; Schwegman, Lundberg, Woessner & Kluth, P.A., P.O. Box 2938, Minneapolis, Minnesota 55402 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR IDENTIFYING DISPOSABLE ABSORBENT PRODUCTS



(57) Abstract: The present invention relates to a system that includes a plurality of disposable absorbent products (12, 32, 42, 52a, 52b, 72, 82, 92, 101, 202) where at least one of the disposable absorbent products includes a tag (14). The system further includes a reader (16) that identifies the tags on the plurality of disposable absorbent products and plays media based on the identity of the tags. In another form, the system includes a reader (56) that identifies the tags (54b) on the plurality of disposable absorbent products (52b) and provides information (58b) relating to one other product based on the identity of the tags. In still another form, the present invention relates to a method that includes marking a plurality of disposable absorbent products (e.g., diapers) with a tag, and providing a reader that plays media (20) based on the identity of the tags.

WO 2005/067836 A1



PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SYSTEM AND METHOD FOR IDENTIFYING DISPOSABLE ABSORBENT PRODUCTS

5

Field of the Invention

This invention relates to systems and methods for identifying disposable absorbent products, and in particular to systems and methods that play media based on the identity of the disposable absorbent products.

10

Background of the Invention

Using imagination is important to a child's development. One example is where a child interacts with toys as part of imaginary play.

Computer technology has brought about the development of interactive 15 toys and games. When a toy includes interactive features, the degree of enjoyment and/or educational stimulation that a child can get from the toy is typically enhanced.

Some interactive toys and games may include embedded electronic 20 sensors that can detect one or more actions taken by the child. The interactive toys may further include a control device that generates a particular operation in response to the child's actions. There are also toys that include a speaker which is coupled to the control device. The control device typically causes the speaker to emit audible signals in response to external stimulation, or communication, provided by the child or other toys. The control device typically selects the type 25 of audible signal that is emitted by the speaker based on the identity of the external stimulation.

The exchange of information between devices is a broad field that 30 includes many different applications. One common method of exchanging information includes providing machine readable information in barcode form on one item, and then scanning the barcode on the item with scanning equipment.

Bar codes are often located on products/packaging to identify products during inventory, distribution and/or automated check out.

Another method of exchanging information includes transmitting and receiving information via "radio" signals. As an example, one or more devices 5 may include passive radiofrequency identification circuits (RFID's), or passive reflector transceivers (PFTs), that are read by another device (e.g., a scanner). In some systems, the scanner activates the RFID, or PFT, via a transmitted signal that has sufficient energy to (i) energize the circuit; and (ii) transmit information from the circuit to the scanner. Some RFID's are capable of sending and 10 receiving information (see, e.g., U.S. Patent No. 5,030,807, which is incorporated herein by reference).

There are some systems that exchange information relating to products which are available for purchase. U.S. Patent No. 6,084,528 discloses a wireless scanning device that includes a video or audio display. The scanning device 15 provides information relating to a particular product that is associated with the scanned symbol.

One drawback with such a system is that the scanning device is typically not readily moved due to its size and weight. Another drawback is that the scanning device typically only includes information relating to the product that is 20 scanned.

There are some known scanning devices that are small enough to be carried at all times. Some examples of scanning devices include pens, wands, keys, key fobs, pagers, flashlights and handheld computers.

One example of a handheld portable scanning device is described in WO 25 01/73687. During operation the scanning device initially receives information by scanning information on a product. The scanner then stores the information within the scanning device. The scanning device is then transported to a computer or internet portal where the information is downloaded to provide access to databases that contain information about the originally scanned objects. 30 WO 01/73687 also describes storing information related to a consumer's preferences.

Summary of the Invention

The present invention relates to a system that includes a plurality of disposable absorbent products where at least one of the disposable absorbent products includes a tag. The system further includes a reader that identifies the tags on the plurality of disposable absorbent products and plays media based on the identity of the tags.

In some sample forms of the system, each of the tags (e.g., barcodes) on the plurality of disposable absorbent products is different from the other tags such that the reader plays different media based on the identity of the tags. As examples, the plurality of disposable articles may be diapers, pull-ups, adult incontinence devices or wipes. In addition, the reader may be included in a toy or diaper changing pad (among other items) that plays media such as audio and/or video recordings.

In some forms, the media that is played by the reader may include educational materials, customized information as to a user of the plurality of absorbent products, and/or product-related information. It should be noted that the product-related information may include information related to contests and/or promotions involving the plurality of absorbent products or another type of product. In addition, depending on the application where the system is used, the tags and/or reader may include customized information related to a user of the plurality of disposable absorbent products.

In some forms of the system, the plurality of disposable absorbent products may be a first plurality of disposable absorbent products such that the system further includes a second plurality of disposable absorbent products. The second plurality of disposable products may include tags that are different than the tags on the first plurality of disposable absorbent products. In some forms, the reader may play one type of media when a tag identifies a product in the first plurality of disposable absorbent products and play different media when a tag identifies a product in the second plurality of disposable absorbent products.

It should be noted that the reader may be a first reader such that the system further includes a second reader that plays media based on the identity of the tags. In some forms, the first reader plays different media than the second reader.

5 There may be some sample forms of the system where each of the tags includes a transmitter, and the reader includes a receiver that identifies the transmitters. In some forms, the system may include multiple readers that monitor a location of the tags. In other forms, the reader may monitor a condition (e.g., wetness) of the tags such that the reader plays media depending
10 on the condition of the tags.

In another aspect, the present invention relates to a system that includes a plurality of disposable absorbent products where at least one of the disposable absorbent products includes a tag. The system further includes a reader that identifies the tags on the plurality of disposable absorbent products and provides
15 information relating to one other product based on the identity of the tags.

15 In some forms, the plurality of disposable absorbent products may be diapers or pull-ups, and the one other product may be food or toys (among other products or services). In addition, the reader may play media that includes information (e.g., promotional information) relating to the other product based
20 on the identity of the tags.

20 In yet another aspect, the present invention relates to a system that includes a plurality of disposable absorbent products where at least one of the disposable absorbent products includes a tag. The system further includes a reader that identifies the tags on the plurality of disposable absorbent products and a card that is attached to at least one of a plurality of disposable absorbent products. The reader sends a signal to the card to play media (e.g., audio recordings) based on the identity of the tags. In some forms, the card may be flexible to facilitate attachment of the card to at least one of the plurality of disposable absorbent products.

30 In still another aspect, the present invention relates to a method that includes marking a plurality of disposable absorbent products (e.g., diapers) with

one or more tags, and providing a reader that plays media based on the identity of the tags. It should be noted that marking a plurality of disposable absorbent products with a tag may include marking each, or some, of the plurality of disposable absorbent products with a tag. In addition, each of the tags may be 5 the same, partially the same, or unique, depending on the application where the system is used.

In some forms, marking a plurality of disposable absorbent products with a tag includes (i) marking the plurality of disposable absorbent products with a barcode; or (ii) placing a transmitter on the plurality of disposable absorbent 10 products. When a transmitter is placed on the plurality of disposable absorbent products, providing a reader may include providing a receiver (e.g., an RFID scanner) that identifies the transmitters on the plurality of disposable absorbent products.

It should be noted that providing a reader may include providing a reader 15 that monitors a location and/or a condition of the tags on the plurality of disposable absorbent products. As an example, one or more readers may monitor the wetness of the tags on diapers, and then play media that includes an alarm depending on whether the tag is wet.

In some forms, providing a reader that plays media based on the identity 20 of the tags may include providing a reader that plays different media based on the identity of the tags. In addition, providing a reader that plays media may include providing a reader that (i) plays audio and/or video recordings; (ii) emits an aroma; (iii) plays media with information customized to a user of the plurality of disposable absorbent products; (iv) plays media with educational material; and 25 (v) plays media with product-related information. In addition, the reader may be a first reader such that the method further includes providing a second reader that plays different media than the first reader based on the identity of the tags.

The method may further include selling the plurality of disposable 30 absorbent products (e.g., diapers) to consumers such that providing a reader includes providing a reader to the consumers of the plurality of disposable absorbent products. In addition, providing a reader to the consumers of the

plurality of disposable absorbent products may include (i) selling the reader to the consumers; and/or (ii) providing media to the consumers (e.g., on a CD or over the internet) that can be played by the reader.

In still another aspect, the present invention relates to a method that 5 includes marking at least one of a plurality of disposable absorbent products (e.g., diapers) with a tag. The method further includes providing a reader to consumers that supplies information to consumers relating to another product based on the identity of the tags. It should be noted that supplying information to consumers relating to another product may include supplying information 10 relating to toys or food (among other products or services).

In some forms of the method, providing a reader to consumers may include providing a reader that plays media with information (e.g., promotional information) relating to another product based on the identity of the tags. In addition, providing a reader to consumers may include providing a reader to a 15 seller of another product so that consumers can access the reader at the other seller's place of business.

The purposes and features of the present invention will be set forth in the description that follows. Additional features of the invention will be realized and attained by the product and processes particularly pointed out in the written 20 description and claims hereof, as well as from the appended drawings.

It is to be understood that both the foregoing general description and the following detailed description are exemplary and are intended to provide further explanation of the invention claimed. The accompanying drawings, which are incorporated in and constitute part of this specification, are included to illustrate 25 and provide a further understanding of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be more fully understood, and further features will become apparent, when reference is made to the following detailed 30 description and the accompanying drawings. The drawings are merely

representative and are not intended to limit the scope of the claims. Like parts depicted in the drawings are referred to by the same reference numerals.

Figures 1-11 illustrate various systems and methods for performing the present invention.

5

DETAILED DESCRIPTION

In the following detailed description, reference is made to the accompanying drawings, which show specific embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention. It is to be understood that other embodiments may be utilized and structural changes made, such that the following detailed description is not to be taken in a limiting sense.

Figure 1 shows a system 10 that includes a plurality of disposable absorbent products 12. As used herein, "plurality of disposable absorbent products" includes a plurality of diapers, pull-ups, adult incontinence devices, wipes and the like (e.g., wipes 12 are shown in Figure 1). At least one of the disposable absorbent products 12 includes a tag 14. The system 10 further includes a reader 16 that identifies the tags 14 on the plurality of disposable absorbent products 12 and plays media 20 based on the identity of the tags 14. In some forms, each of the tags 14 on the plurality of disposable absorbent products 12 is different from the other tags 14 such that the reader 16 plays different media 20 based on the identity of each tag 14. In the example embodiment illustrated in Figure 1, the tags 14 are barcodes 14 and the reader 16 includes a scanner 18 that identifies the barcodes 14.

It should be noted that the media 20 may be stored in the reader 16, or a device that is operatively coupled to reader 16. In some forms, the media 20 may include audio recordings that are played through speakers 22 on the reader 16 and/or video recordings that are played through a monitor 23 on the reader 16. The media 20 may also include an aroma that is distributed through a dispersion system 24 on the reader 16. The media 20 may be played by the reader 16 at random or in a pre-selected pattern.

The type of information included in the media 20 will vary depending on the application where the system is used. As an example, the media 20 may include educational materials and/or product-related information. In some forms, the product-related information may include information involving 5 contests or promotions related to the plurality of disposable products 12.

The media 20 may also include customized information related to a user of the plurality of disposable products 12. As an example, if the reader 16 plays an audio-visual story when a barcode 14 is scanned by scanner 18, the story may be modified to include a particular child's name that is associated with the 10 barcode 14 that was scanned. It should be noted that the customized information may be stored within the information associated with the tag 14, or stored in the reader 16. The reader 16 is then able to associate the customized information with one or more tags 14. In some forms, the reader 16 allows a user of the plurality of disposable products 12 to input customized information into the 15 reader 16. The customized information may then be incorporated into the media 20.

In addition, when the plurality of disposable products 12 is diapers, the media 20 played by the reader 16 may create an interactive environment with a child. In some forms, parents could buy or download media 20 (e.g., from the 20 Internet) that may be played by one or more readers 18 to support an interactive environment. The interactive environment may be theme-based such that the media references certain types of stories and fictional characters (e.g., Barney, Cinderella and Sesame Street). The receiver 16 may also allow parents, or others, to record voices (e.g., using a digital voice recorder) and/or customize the 25 names that are used in theme-based stories.

Figure 2 illustrates another example system 30 that includes a plurality of disposable absorbent products 32 (e.g., diapers 32 are shown in **Figure 2**). At least one of the disposable absorbent products 32 includes a tag 34. The system 30 further includes a reader 36 that is similar to reader 16. The reader 36 30 identifies the tags 34 on the plurality of disposable absorbent products 32 and plays media 38 based on the identity of the tags 34.

In the example form illustrated in **Figure 2**, each of tags 34 includes a transmitter 35 that sends information (e.g., via a radio frequency) to a receiver 37 which is operatively coupled to the reader 36. The receiver 37 identifies the tags 34 based on information received from the transmitters 35.

5 In some forms, the reader 36 may be used to monitor the presence of one or more tags 34 on the plurality of disposable products 32. As an example, the reader 36 may play media 38 that indicates a child wearing the diaper 32 is in the vicinity of the reader 36, or has left the vicinity of the reader 36.

It should be noted that the tags 34 and reader 36 may use radiofrequency
10 identification (RFID). RFID is the use of radio frequency signals to read information on a small tag. RFID tags can be passive tags that rely on RF energy from an RFID scanner to activate a circuit and provide power to a small antenna that retransmits a weak signal, or they can be active tags that have their own power source for generating an RF signal containing information to be read by a
15 scanner. Most RFID tags in use contain microchips to provide identity information or other information, but chip-less tags and taggants, such as nanobarcodes are also available. It should be noted that the RFID scanners and RFID tags may include any combination of active and passive circuits.

In some forms, the tags are RFID read/write tags (i.e., the tags can supply
20 information and receive information). As an example, one or more of the tags 34 may be supplied with information such as sound bites recorded by parents, caregivers, relatives and teachers (among others). The information is provided to the receiver 37 such that the reader 36 incorporates the information into the media 38 that is played by the reader 36.

25 **Figure 3** shows another example system 40 that includes a plurality of disposable absorbent products 42 (e.g., diapers 42 are shown in **Figure 4**). At least one of the disposable absorbent products 42 includes a tag 44 (see, e.g., the diaper 42 worn by the toddler 41). The system 40 further includes a first reader 45 and a second reader 46. The first and second readers 45, 46 identify the tags
30 44 on the diapers 42.

In some forms, the first and second readers 45, 46 may be used to monitor the presence of a tag 44 on the diaper 42 worn by the infant 41. As an example, the first reader 45 may be in a first room 47A. The first reader 45 may play media 48A that indicates the toddler 41 is in the first room 47A. In 5 addition, the second reader 46 may be in a second room 47B. The second reader may play media 48B that indicates the toddler 41 is in the vicinity of the second room 47B.

Figure 4 shows another example system 50 that includes a first plurality of disposable absorbent products 52A and a second plurality of disposable 10 absorbent products 52B (e.g., diapers 52A, 52B are shown in Figure 3). At least some of the plurality of disposable absorbent products 52A, 52B includes respective tags 54A, 54B. The system 50 further includes a reader 56 that is similar to one or more readers described previously.

In the example form illustrated in Figure 4, each of tags 54A on the first 15 plurality of disposable absorbent products 52A is different from the tags 54B on the second plurality of disposable absorbent products 52B. In some forms, the reader 56 plays one type of media 58A when a tag 54A identifies a product in the first plurality of disposable absorbent products 52A and plays different media 58B when a tag 54B identifies a product in the second plurality of disposable 20 absorbent products 52A.

It should be noted that the interaction of two or more tags with a reader may cause the reader to play one or more special types of media. The tags may be from the same group of products or different groups of products depending on the application. As an example, the name of a child and the child's sibling may 25 both be used in a story that is played by a reader.

Figure 5 shows another example system 60 that includes a plurality of disposable absorbent products 62 (e.g., diapers 62 are shown in Figure 5). In the example form illustrated in Figure 5, at least one of the disposable absorbent products 62 includes a tag 64. The system 60 further includes a first reader 65 30 and a second reader 66. The first and second readers 65, 66 may be any type of reader that is described or referenced herein.

The first and second readers 65, 66 identify the tags 64 on the plurality of disposable absorbent products 62. In some forms, the first reader 65 may play one type of media 68A based on the identity of the tags 64 when the tags 64 are scanned by the first reader 65. In addition, the second reader 66 may play 5 another type of media 68B based on the identity of the tags 64 when the tags 64 are scanned by the second reader 66.

Figure 6 shows another example system 70 that includes a plurality of disposable absorbent products 72 (e.g., diapers 72 are shown in Figure 6). At 10 least one of the disposable absorbent products 72 includes a tag 74 (see, e.g., the diaper 72 worn by the infant 71). The system 70 further includes a reader 76 that is similar to one or more of the readers described or referenced herein. The reader 76 monitors a condition of the tags 74 using a sensor 75 that is operatively coupled to the tags 74.

The type of condition that is monitored by the sensors 75 will depend in 15 part on the application where the system 70 is used. Some example conditions that may be monitored by the tags 74 include wetness and temperature (among others).

In the example form illustrated in Figure 6, the tags 74 include a sensor 20 75 that monitors when the diaper 72 is holding waste 77. When the diaper 72 is holding waste 77, the tag 74 sends information to the reader 76 which indicates that the diaper 72 contains waste 77. Once the reader 76 receives such information, the reader 76 may play media 78 that indicates the diaper 72 includes waste 77. In some forms, the reader 76 may play one type of media 78 when the diaper 72 is dry and play another type of media 78 when the diaper 72 25 is wet. In addition, the media 78 may include information that is meant to promote worthwhile behavior, such as to provide potty training.

Although Figures 1-6 illustrate similar readers, it should be noted that the reader may be incorporated into different types of devices. Figure 7 shows 30 another example system 80 that includes a plurality of disposable absorbent products 82 (e.g., diapers 82 are shown in Figure 7). At least one of the

disposable absorbent products 82 includes one or more tags 84 (see, e.g., the diaper 82 being worn by the infant or toddler 81).

The system 80 further includes a reader 86 that is in the form of a stuffed toy 86. The toy reader 86 identifies the tags 84 and plays media 88 based on the 5 identity of the tags 84. It should be noted that any type of toy may be used in the system 80.

Using a toy to play the media 88 enhances the stimulation enjoyed by the infant 81. The enhanced stimulation may aid in keeping the infant 81 occupied during certain activities (e.g., changing a diaper 82). In the example toy reader 10 86 illustrated in **Figure 7**, the toy reader 86 includes a monitor 87 that plays video media 88. In some forms of the system 80, the toy reader 86 may play more than one type of media 88.

Figure 8 shows another example system 90 that includes a plurality of disposable absorbent products 92 (e.g., diapers 92 are shown in **Figure 8**). At 15 least one of the disposable absorbent products 92 includes one or more tags 94. The system 90 further includes a reader 96 that is formed into part of a diaper changing pad 97 which plays media 98 based on the identity of the tags 94.

In the example form illustrated in **Figure 8**, the diaper changing pad 97 includes a speaker 99 that plays audio media 98. The size and shape of the 20 diaper changing pad 97 and the type of media 98 that is played by the reader 96 will depend on the application where the system 90 is used. It should be noted that in other forms of the system 90, the reader 96 may be operatively associated with a car seat cover, a high chair pad, a play mat, a crib liners and a disposable protective polymeric sheet (among other items).

25 Another example system 100 is illustrated in **Figure 9**. The system 100 includes a plurality of disposable absorbent products 102 (e.g., diapers 102 are shown in **Figure 9** with one of diapers 102 being worn by a child 101). In the example system 100 illustrated in **Figure 9**, at least one of the diapers 102 includes a tag 104. The system 100 further includes a reader 106 that identifies 30 the tags 104 on the plurality of disposable absorbent products 102. The reader

106 plays media 108 that provides information relating to one other product (or service) based on the identity of the tags 104.

In the example form of the system illustrated in **Figure 9**, the one other product is toys (see e.g., toy 109 on reader 106). As an example, the reader 106 5 may play media 108 that includes information relating to toys based on the identity of the tag 104. The tag 104 may indicate the age, gender and/or name (among other things) of the child 101 wearing the diaper 102. Therefore, the reader 106 is able to select appropriate media to play for the child 101 based on the identity of the tag 104. The information in the media may relate to 10 promotions and/or contests involving toy products.

Figure 10 illustrates another example embodiment of the system 100. In the example embodiment shown in **Figure 10**, the one other product is food (see e.g., hamburger 107 on reader 106). As an example, the identity of tag 104 may trigger the reader 106 to play media 108 with information relating food 15 discounts, giveaways or menu choices directed to children.

It should be noted that in example forms illustrated in **Figures 9 and 10** the reader 106 may be connected to the internet at a retailer of the one other product. In addition, the reader 106 may be able to download media that includes information as to promotions or contests relating to the one other 20 product. In other forms, a consumer may bring media (e.g., on a disk) that can be downloaded to the reader at the retailer's location.

Figure 11 illustrates another example system 200 that includes a plurality of disposable absorbent products 202 (e.g., diapers 202 are shown in **Figure 11**). At least one of the disposable absorbent products 202 includes a tag 204. The 25 system 200 further includes a reader 206 that identifies the tags 234 on the plurality of disposable absorbent products 202.

In the example form illustrated in **Figure 11**, each of tags 204 includes a transmitter 205 that sends information (e.g., via a radio frequency) to a receiver 207 which is operatively coupled to the reader 206. The receiver 207 identifies 30 the tags 204 based on information received from the transmitters 205.

The system 200 further includes one or more cards 210 that are attached to at least one of the plurality of disposable absorbent products 202. The cards 210 may be attached to one, some or all of the plurality of disposable absorbent products 202. In some forms, more than one card 210 may be attached to one or 5 more of the plurality of disposable absorbent products 202.

Based on the identity of the tags 204, the reader 206 sends signals (e.g., wireless RF signals) to the cards 210 that instruct the cards 210 to play media 212. It should be noted that the media 212 may be stored in the reader 206 and/or the cards 210. In some forms, the media 212 may include audio 10 recordings that are played by the card 210.

The reader 206 may be capable of being connected to the internet so that parents could download the media 212. In addition, the reader 206 in the system 200 may allow parents, or others, to (i) record voices that may be included in the media 212; and/or (ii) add customized information (e.g., a child's name) that 15 may be included in the media 212.

The type of cards 210 that are used in the system 200 will depend on the application where the cards 210 are used. In some forms, the cards 210 may be flexible to conform to the plurality of disposable absorbent products 202 (e.g., diapers).

It should be noted that the number, size, style and arrangement of the tags in any of the systems described herein will depend on the application where the tags are used, and will be especially dependent on the type of disposable absorbent products where the tags are placed. In addition, the number and different types of media that may be played by the readers in the systems 20 described herein will depend on the application where the systems are used. As used herein, media includes any type of file or storage means (e.g., electronic, magnetic) now known, or developed in the future, that can be played by hardware (e.g., speakers, monitors and/or dispersion systems) either directly or indirectly (i.e., through other hardware and/or software).

30 Some example methods of the present invention will now be described with reference to **Figures 1-11**. In some forms, the method includes marking at

least one of a plurality of disposable absorbent products 12 with a tag 14 and providing a reader 16 that plays media 20 based on the identity of the tags 14 (see, e.g., **Figure 1**).

It should be noted marking at least one of a plurality of disposable absorbent products 12 with a tag 14 may include marking some of the plurality of disposable absorbent products 12 with a tag 14 or marking each of the plurality of disposable absorbent products 12 with a unique tag 14. As an example, **Figure 1** illustrates marking a plurality of disposable absorbent products 12 with a barcode 14.

10 In some forms, the reader 16 may have the ability to download media 20 from the internet based on the identity of the tag 14. The tag 14 may also include information that instructs the reader 16 what media 20 to play from the internet. It should be noted that when the reader is adapted to obtain media from other sources (e.g., the internet), the reader does not necessarily have to store media for 15 different sizes and types of disposable absorbent products 12. The reader 16 may also be able to read CD's (or other electronic media) such that the reader can play multiple types of media 20 based in the identity of the tags 14.

20 In another form of the method shown in **Figure 2**, marking a plurality of disposable absorbent products 32 with a tag 34 includes marking diapers 32 with a tag 34. In other forms, marking a plurality of disposable absorbent products 32 with a tag 34 may include marking pull-ups or adult incontinence articles with a tag 34. In addition, providing a reader may include providing a toy reader (see, e.g., toy reader 86 in **Figure 7**).

25 **Figure 2** also shows that marking at least one of a plurality of disposable absorbent products 32 with a tag 34 may include placing a transmitter 35 on the plurality of disposable absorbent products 32. In addition, providing a reader 36 may include providing a receiver 37 that identifies the transmitters 35 on the plurality of disposable absorbent products 32.

30 Some other example forms of the method may include providing a reader that monitors the tags on a plurality of disposable absorbent products. It should be noted that providing a reader may include providing a reader 45 that plays

media 48A and monitors a location of the tags 44 on the diapers 42 (see, e.g., reader 45 in **Figure 3**).

In some forms, the reader 45 is a first reader 45 such that the method further includes providing a second reader 46 that plays media 48B and monitors 5 a location of the tags 44. **Figure 3** shows how the first reader 45 can be used to monitor when an infant 41 is in one room 47A and the second reader 46 can be used to monitor when an infant 41 is in another room 47B.

Figure 6 illustrates an example form of the method where providing a reader 76 that monitors the tags 74 on the plurality of disposable absorbent products 72 includes providing a reader 76 that monitors a condition of the tags 74. As an example, a reader 76 may be provided that receives signals from a sensor 75 on the tags 74 to monitor chemistry, wetness and/or the temperature of the tags 74. In some forms, the chemistry, wetness and/or temperature of a tag 74 may be used to determine whether there is waste 77 within a diaper 72 that is 15 worn by the infant 71.

Referring again to **Figure 1**, it should be noted that providing a reader 16 which plays media 20 based on the identity of the tags 14 may include providing a reader 16 that (i) plays different media 20 based on the identity of the tags 14; (ii) plays audio-video recordings (e.g., on monitor 23 and speaker 22); (iii) emits 20 an aroma (e.g., through dispersion system 24); (iv) plays media 20 with information customized to a user of the plurality of disposable absorbent products 12; and/or (iv) plays media with educational material and/or product-related information.

The method may further include selling the plurality of disposable 25 absorbent products to consumers (see, e.g., wipes 12 in **Figure 1** and diapers 32 in **Figure 2**). In addition, providing a reader 16 that plays media may include providing a reader 16 to the consumers of the plurality of disposable absorbent products 12 (e.g., by selling or giving away the reader 16 to the consumers). In some forms, providing a reader 16 to the consumers of the plurality of disposable 30 absorbent products 12 may include providing one or more different types of media 20 to the consumers that can be played by the reader 16. As examples,

consumers may be provided with media that is contained on CD's, or directed to one or more websites where the consumer can download media.

Figure 5 shows that the reader may a first reader 65 such that providing a reader may include providing a first reader 65 that plays one type of media 68A based on the identity of the tags 64. The method may further include providing a second reader 66 that plays different media 68B based on the identity of the tags 64.

Figures 9-10 illustrate another example method that includes marking at least one of a plurality of disposable absorbent products (e.g., diapers 102) with a tag 104. The method further includes providing a reader 106 to consumers that supplies information to consumers relating to one other product based on the identity of the tags 104. Some examples include providing a reader 106 that supplies information relating to toys 109 (Figure 9) and/or food 107 (Figure 10) (among other products or services).

It should be noted that providing a reader 106 to consumers may include providing a reader 106 that plays media 108 with information (e.g., promotional information) relating to the one other product based on the identity of the tags. In some forms, providing a reader 106 to consumers may include providing a reader 106 to a seller of the one other product.

Providing a reader 106 to a seller of the one other product (e.g., food 107, toys 109) would allow consumers to readily obtain the one other product soon after the reader 106 scans the tags 104 on the plurality of disposable absorbent products 102. In some forms, providing a reader 106 to a seller of the one other product may include providing media 108 with information as to where to locate the one other product within the seller's store. It should be noted that in some forms, the one other "product" may be a service that is performed (e.g., dry-cleaning or making travel arrangements).

The type of disposable absorbent article, tag and reader that are used in the described methods depends on the application where the disposable absorbent products, tags and readers are used. In addition, the type of media,

including the type of information supplied by the media, will depend on the application where the system is used.

The operations discussed above with respect to the described methods may be performed in a different order from those described herein. In addition, 5 Figures 1-11 are representational and are not necessarily drawn to scale. Certain proportions thereof may be exaggerated, while others may be minimized.

While the invention has been described in detail with respect to the specific aspects thereof, it will be appreciated that those skilled in the art, upon attaining an understanding of the foregoing, may readily conceive of alterations 10 to, variations of, and equivalents to these aspects which fall within the spirit and scope of the present invention, which should be assessed accordingly to that of the appended claims.

I Claim:

1. A system comprising:
a plurality of disposable absorbent products, wherein at least one of said disposable absorbent products includes a tag; and
a reader that identifies said tag and plays media based on the identity of said tag.
- 5 2. The system of claim 1 wherein each tag on said plurality of disposable absorbent products is different from other tags on said plurality of disposable absorbent products, and
a reader plays different media based on the identity of said tags.
- 10 3. The system of claim 1 wherein said tag is a barcode and said reader includes a scanner that identifies said barcodes.
- 15 4. The system of claim 1 wherein said plurality of disposable absorbent products is diapers and said reader is included in a toy.
- 5 5. The system of claim 1 wherein said media includes at least one of audio recordings, video recordings and an aroma emitted by said reader.
- 20 6. The system of claim 1 wherein said reader receives said media over the internet.
7. The system of claim 1 wherein said tags include information related to a user of said plurality of disposable absorbent products.
- 25 8. The system of claim 1 wherein each of said tags includes a transmitter and said reader includes a receiver that identifies said transmitters.
9. A system comprising:
30 a plurality of disposable absorbent products, wherein at least one of said disposable absorbent products includes a tag; and

a reader that identifies said tags on said plurality of disposable absorbent products, wherein said reader provides information relating to one other product based on the identity of said tags.

5 10. The system of claim 9 wherein said plurality of disposable absorbent products is diapers, and said one other product is food.

11. The system of claim 9 wherein said plurality of disposable absorbent products is diapers, and said one other product is toys.

10

12. A system comprising:

a plurality of disposable absorbent products, wherein at least one of said disposable absorbent products includes a tag;

a reader that identifies said tags on said plurality of disposable absorbent products;

15 and

a card attached to at least one of said plurality of disposable absorbent products, the reader sending a signal to said card to play media based on the identity of said tags.

13. The system of claim 12 wherein said reader receives said media over the internet.

20

14. A method comprising:

marking at least one of a plurality of disposable absorbent products with a tag; and providing a reader that plays media based on the identity of the tag.

25 15. The method of claim 14 wherein marking at least one of a plurality of disposable absorbent products with a tag includes marking some diapers with a tag.

16. The method of claim 14 further comprising selling the plurality of disposable absorbent products to consumers.

30

17. The method of claim 14 wherein providing a reader to the consumers of the plurality of disposable absorbent products includes selling the reader to the consumers.

18. A method comprising:
marking at least one of a plurality of disposable absorbent products with a tag; and
providing a reader to consumers of the plurality of disposable absorbent products,
5 the reader supplying information to the consumers relating to one other product based on
the identity of the tags.
19. The method of claim 18 wherein marking at least one of a plurality of disposable
absorbent products with a tag includes marking diapers with a tag.
- 10 20. The method of claim 18 wherein supplying information to consumers relating to
one other product includes supplying information relating to toys.

1/11

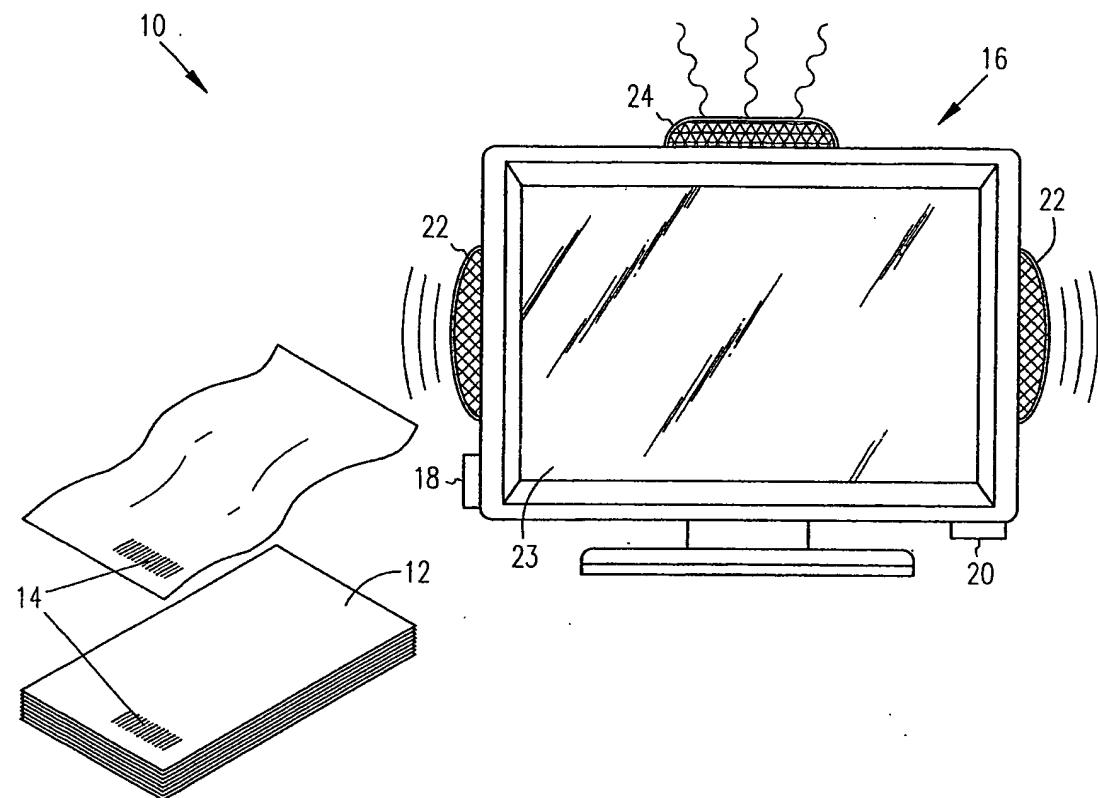


FIG. 1

2/11

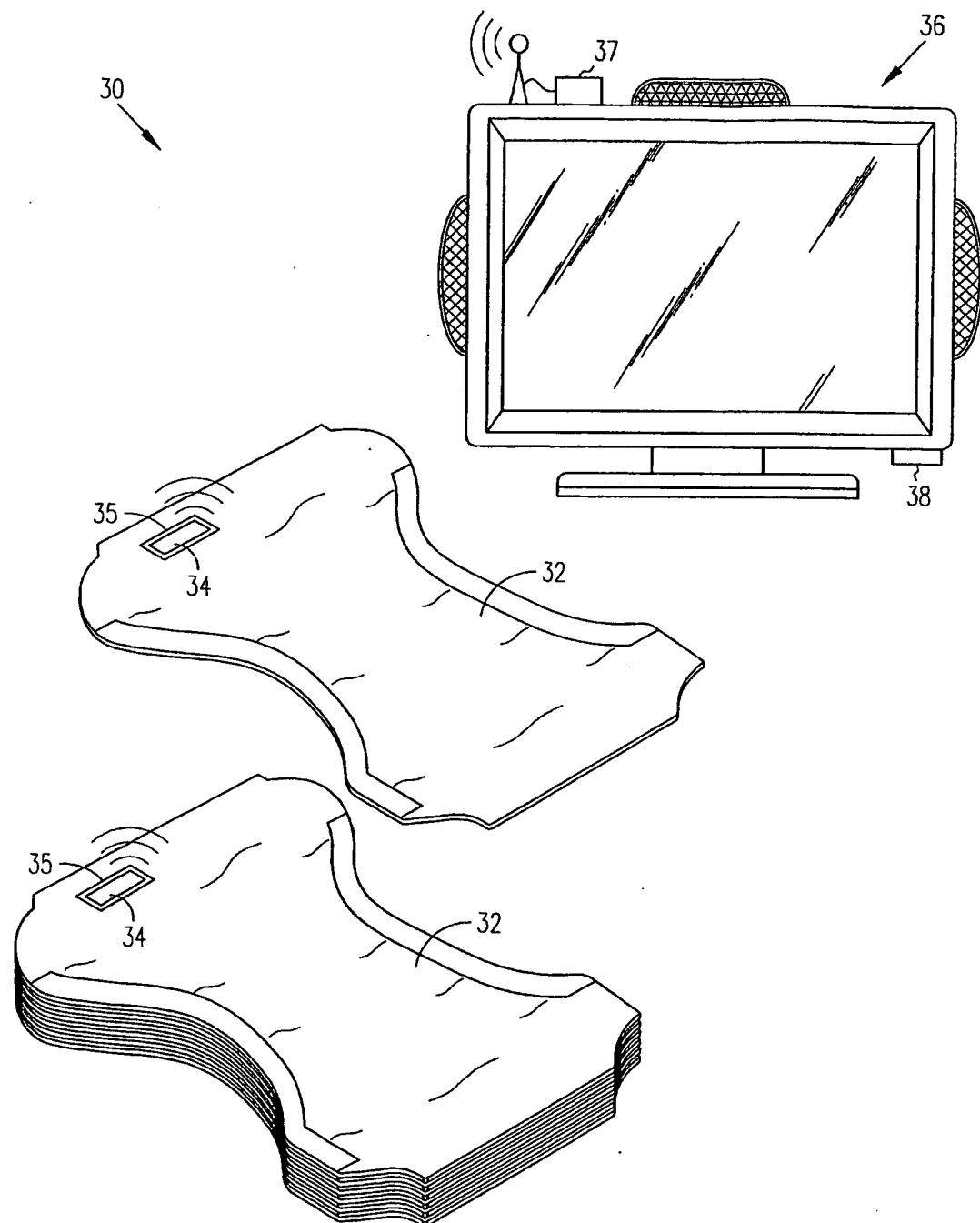


FIG. 2

3/11

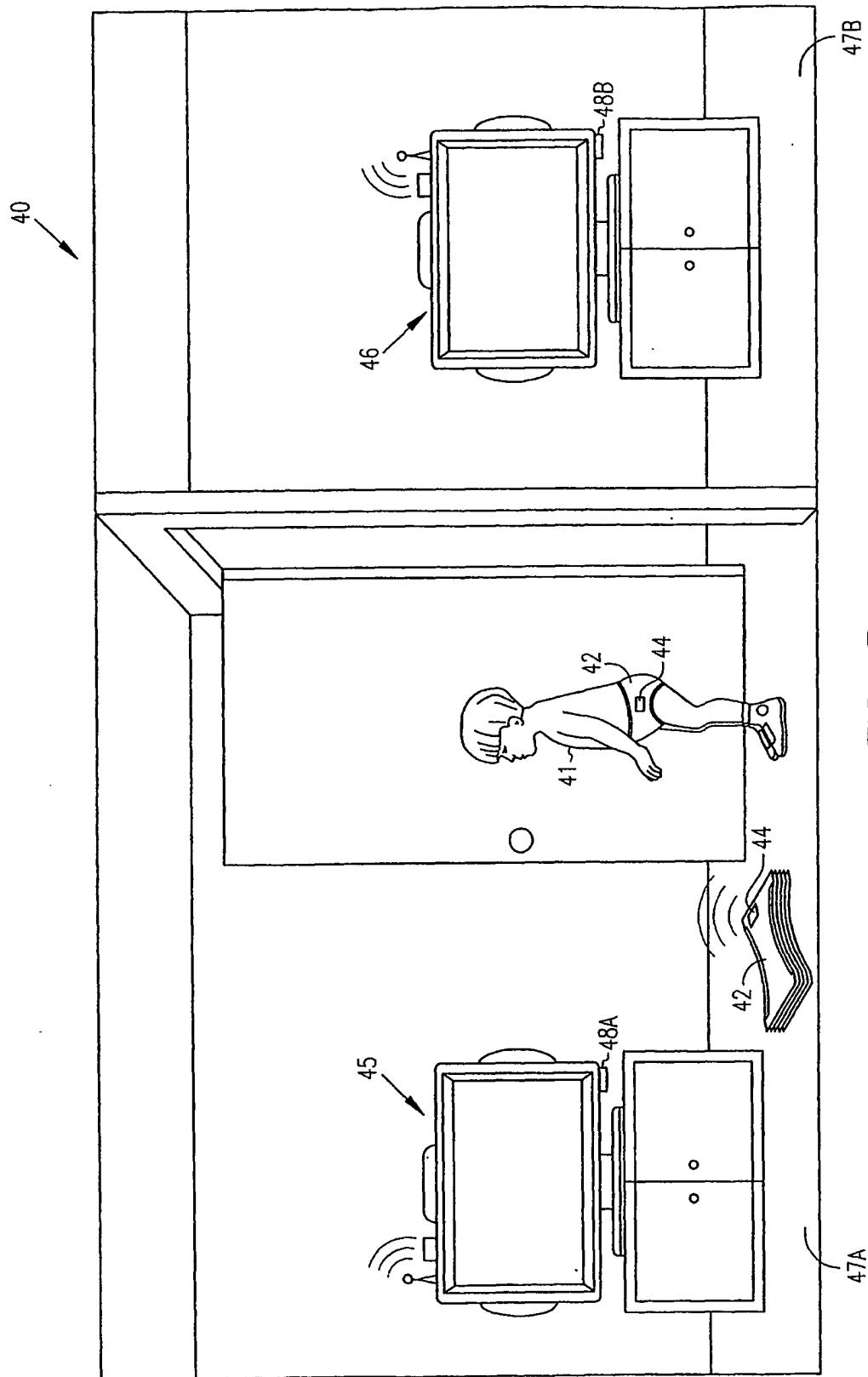


FIG. 3

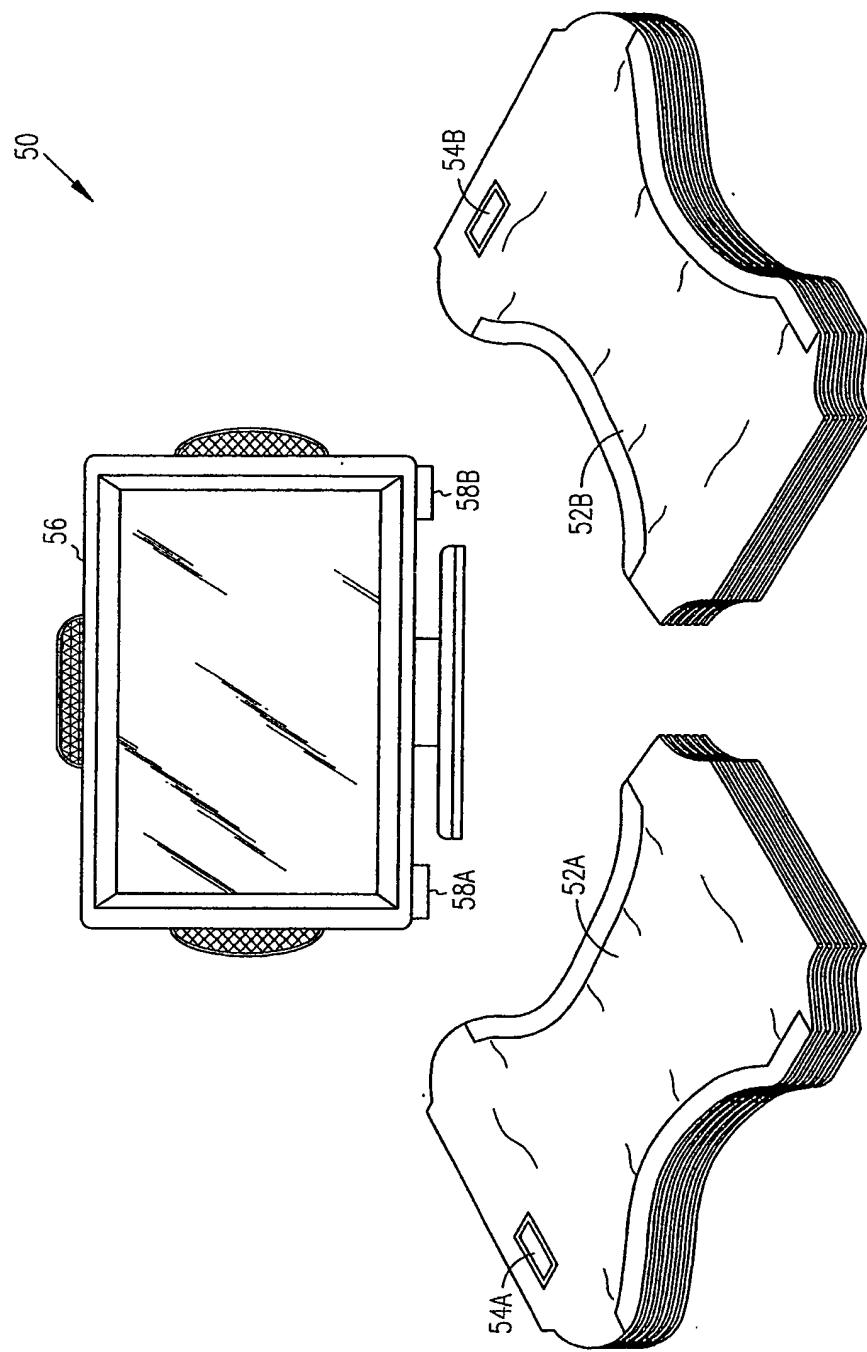


FIG. 4

5/11

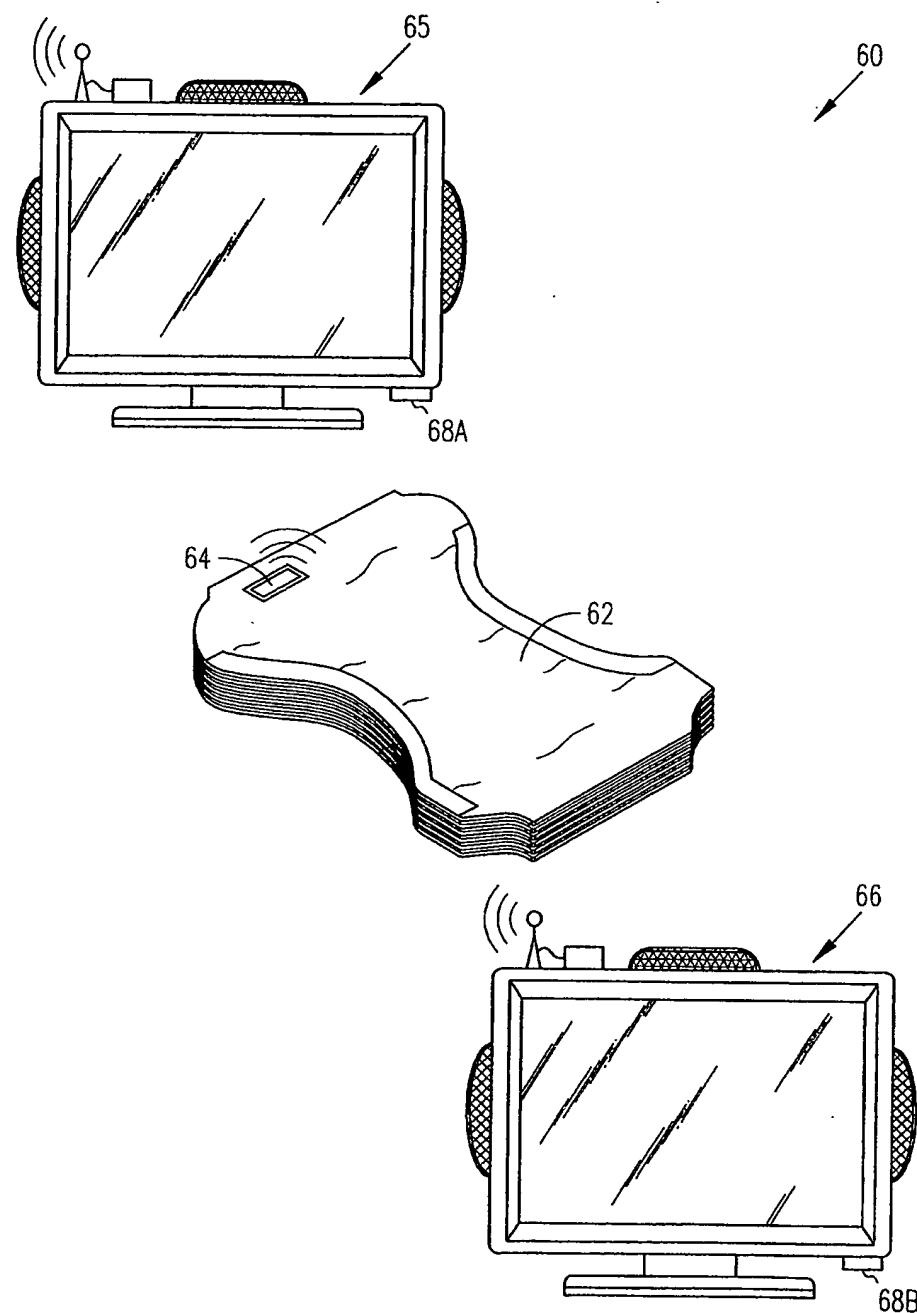


FIG. 5

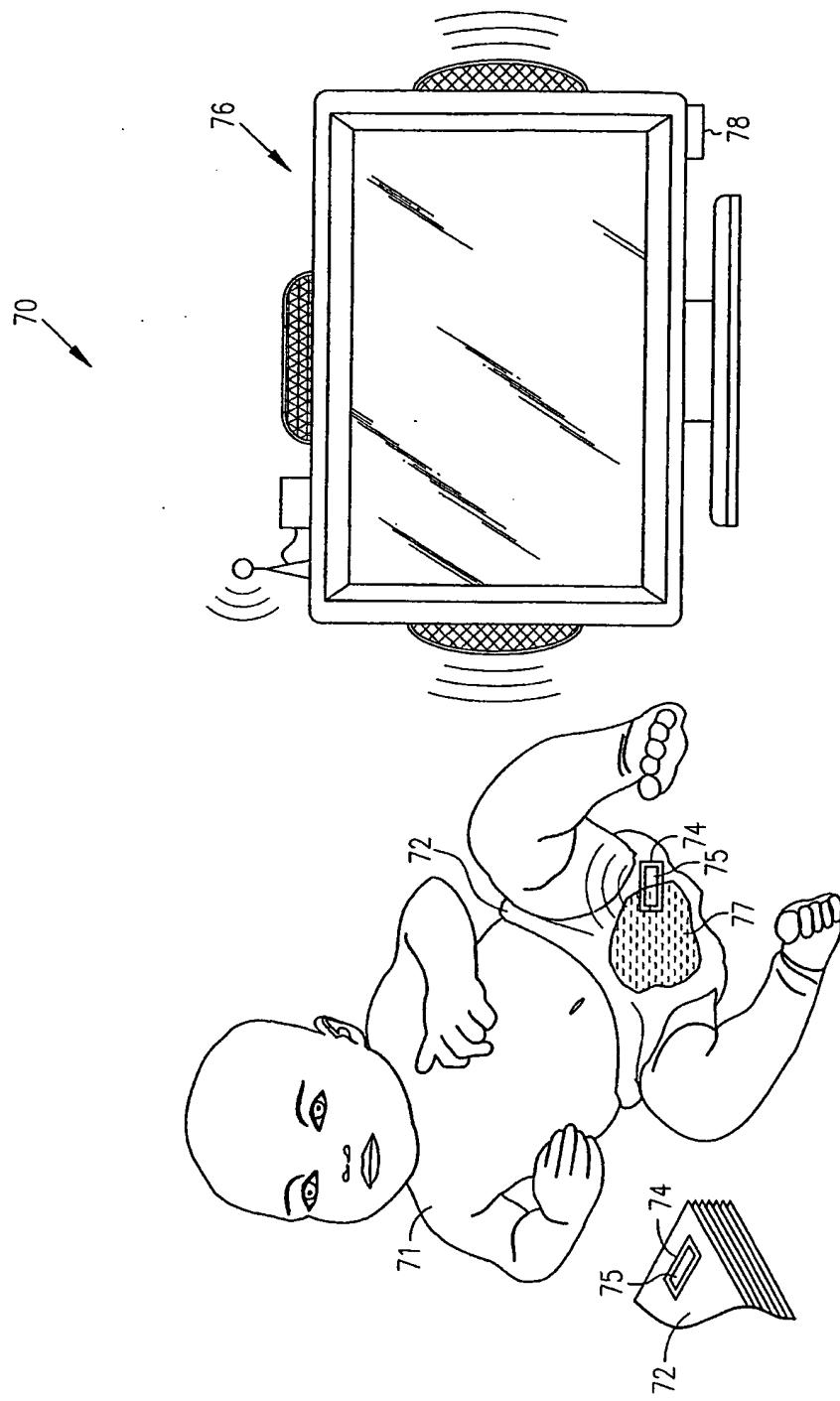
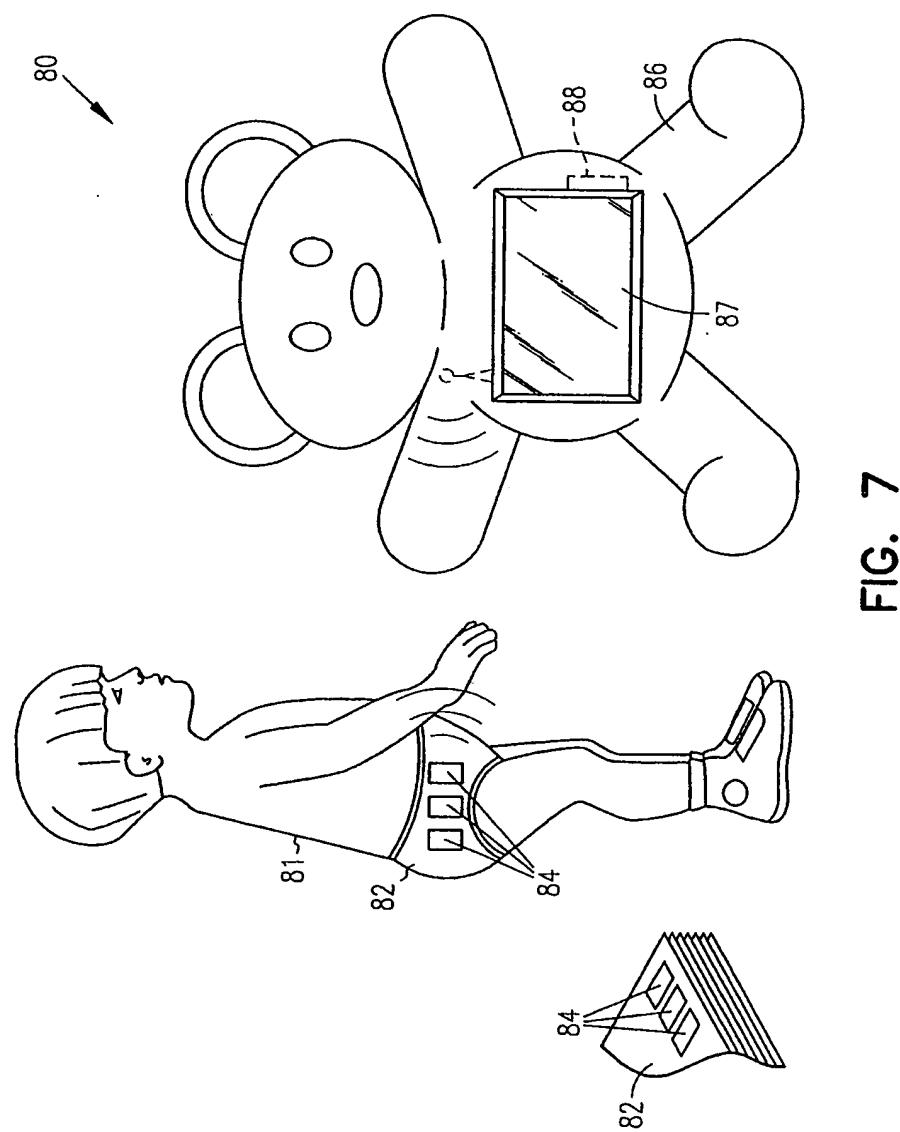


FIG. 6



8/11

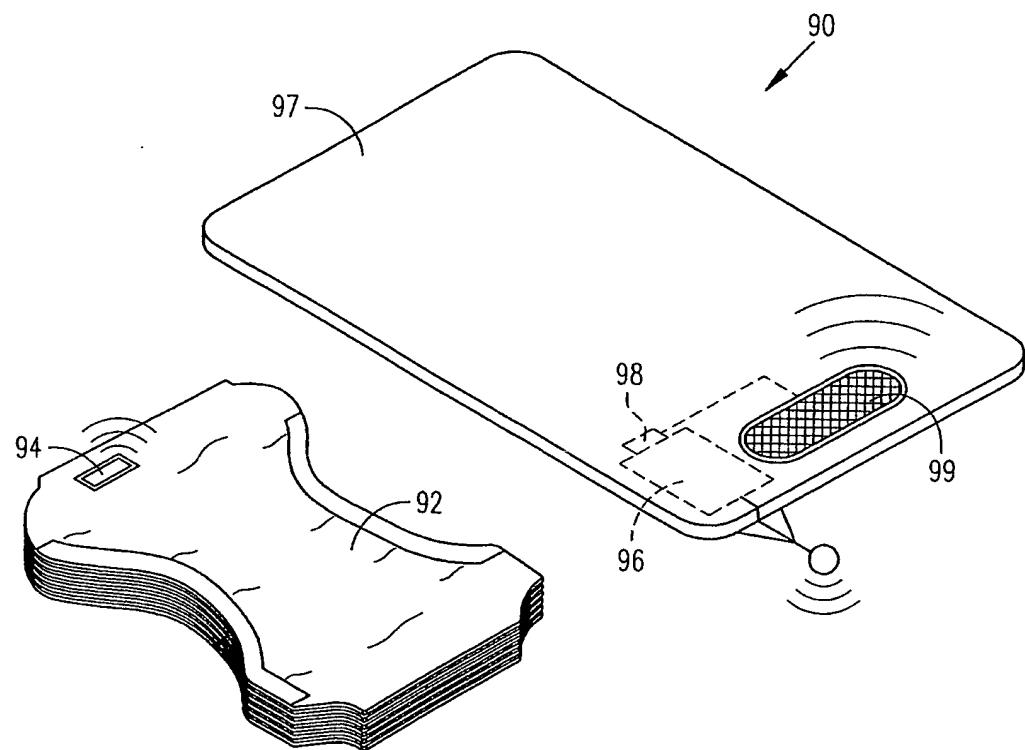


FIG. 8

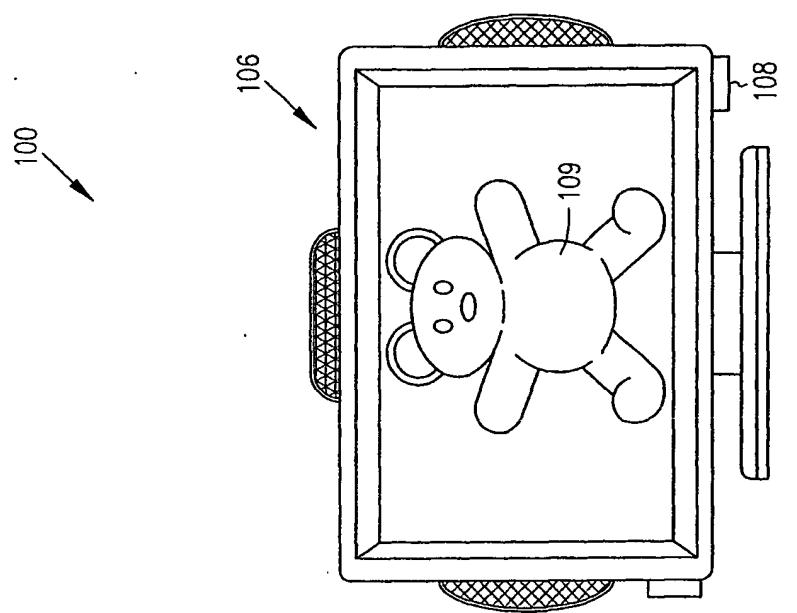
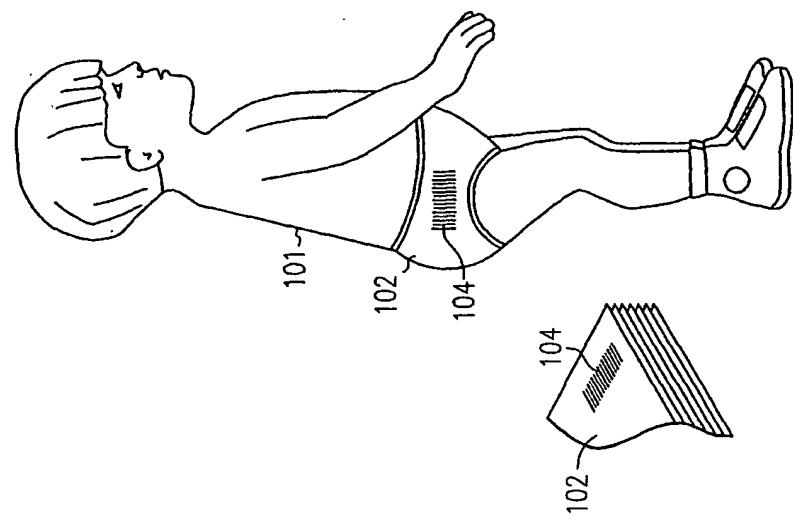


FIG. 9



10/11

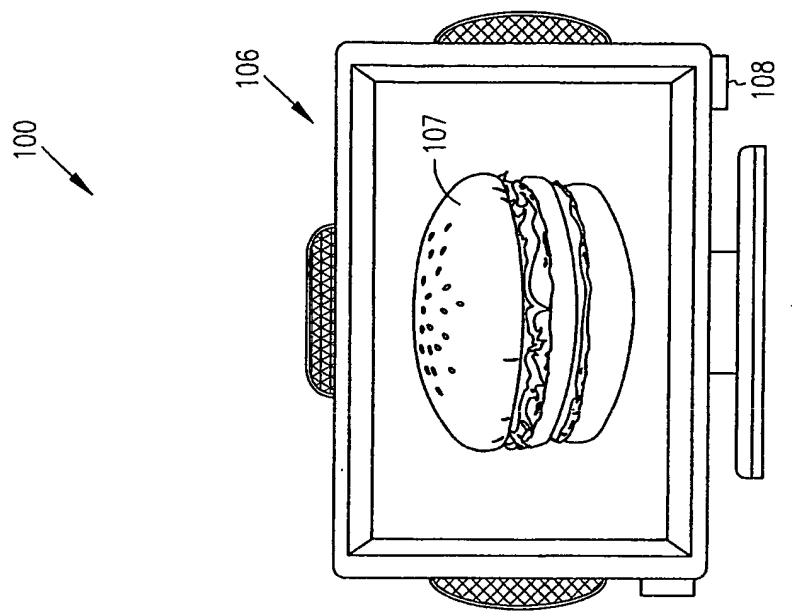
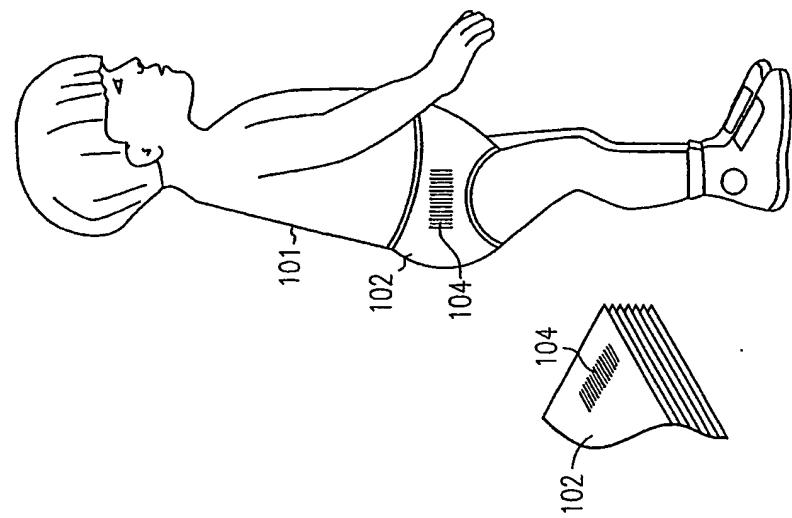


FIG. 10



11/11

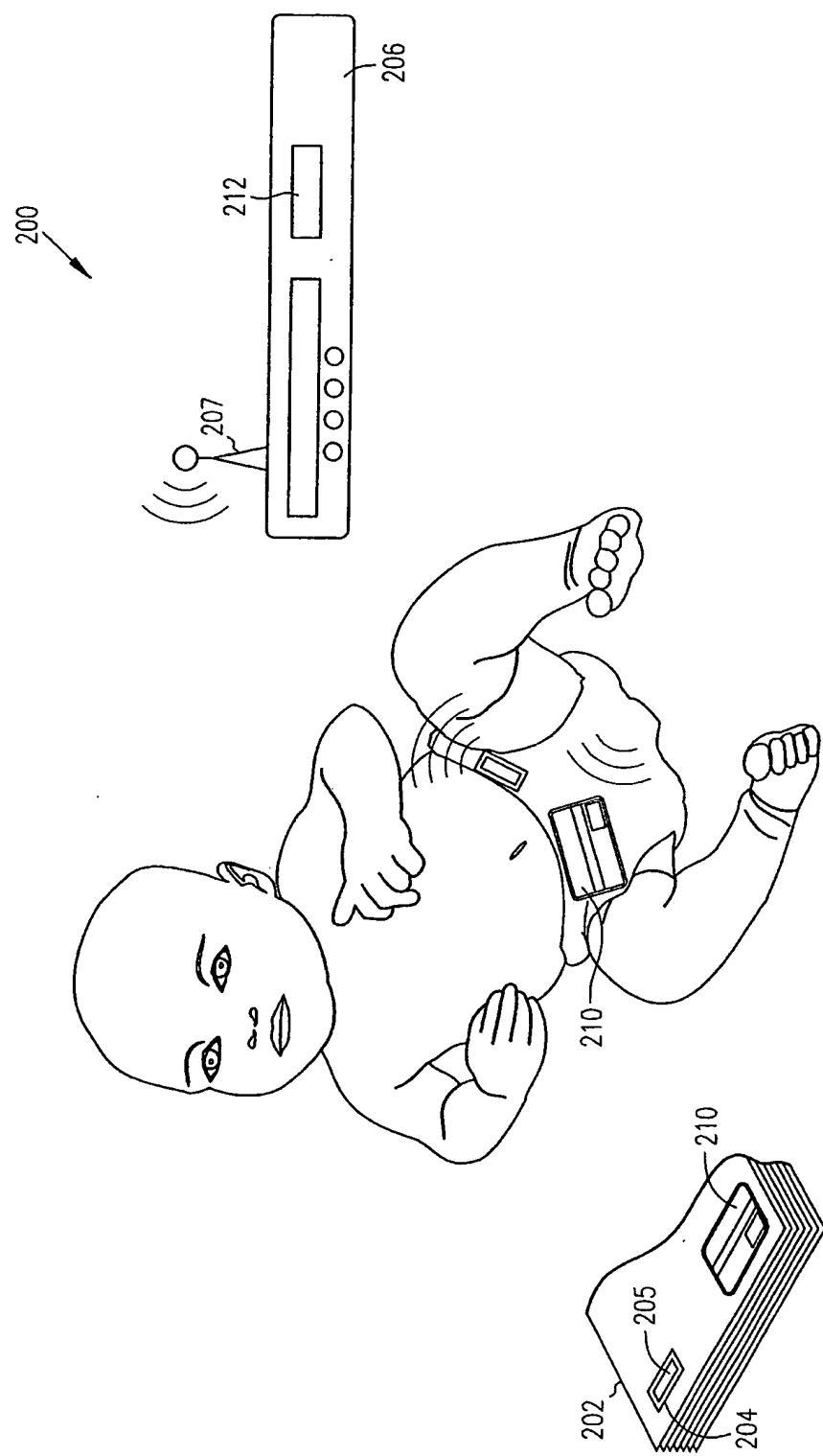


FIG. 11

INTERNATIONAL SEARCH REPORT

ational Application No
./US2004/025863

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61F13/00 A61F13/42 A63H3/36 G06K7/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F A61H G09B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2003 058759 A (DAIO PAPER CORP) 28 February 2003 (2003-02-28) the whole document	1-3, 5, 6, 8, 9, 12-15
X	US 5 392 032 A (KLINE MICHAEL J ET AL) 21 February 1995 (1995-02-21) column 2, lines 50-68 column 4, lines 4-24 column 6, lines 12-19, 49-58 column 8, line 65 - column 9, line 2 column 9, lines 37-48; figures 1-20	1, 2, 5, 6, 8, 9
Y	WO 83/02188 A (MERITBOND LIMITED) 23 June 1983 (1983-06-23) page 1, line 6 - page 2, line 29; figure 1	4 12-15
Y		4
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

17 November 2004

26/11/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Brumme, I

INTERNATIONAL SEARCH REPORT

International Application No

. . . /US2004/025863

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 594 228 A (SWARTZ JEROME ET AL) 14 January 1997 (1997-01-14) the whole document	1-6,8,9, 12-15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2004/025863

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: 7, 10, 11, 16-20
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iii) PCT - Scheme, rules and method for doing business (claims 16-20)
Rule 39.1(v) PCT - Presentation of information (claims 7, 9-11)
2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

tional Application No

.../US2004/025863

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
JP 2003058759	A	28-02-2003	NONE			
US 5392032	A	21-02-1995	NONE			
WO 8302188	A	23-06-1983	AU EP WO	1103783 A 0095493 A1 8302188 A1	30-06-1983 07-12-1983 23-06-1983	
US 5594228	A	14-01-1997	CN JP US US US US CA DE EP JP JP JP	1083608 A ,B 6208640 A 5979758 A 6102290 A 5814799 A 5117098 A 1331056 C 68912450 D1 0355355 A2 2003565 C 2112083 A 7040285 B	09-03-1994 26-07-1994 09-11-1999 15-08-2000 29-09-1998 26-05-1992 26-07-1994 03-03-1994 28-02-1990 20-12-1995 24-04-1990 01-05-1995	